UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

Project h:1-13 Date Author

TITLE

EXTENSIVE SURVEY REPORT OF THE POWELL NATIONAL FOREST, UTAH
1940

by

D. A. Hester
Bureau of Entomology and Plant Quarantine
and

Wanless Alvey
U. S. Forest Service

Forest Insect Laboratory,
Portland, Oregon,
January 20, 1941

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Entomology and Plant Quarantine
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PORTLAND, OREGON

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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
WASHINGTON, D. C.

January 30, 1941

Mr. F. P. Keen
Portland
Oregon

Dear Keen:

We have your letter of January 20 and Hester's report on the Powell, copy of which has been turned over to Mr. Carter. Apparently there is no further action required on this. We all hope they will get a good clean job done this winter and that we can write the Powell off our schedules for a few years to come.

Sincerely yours,

F. C. Craighead
In Charge
Forest Insect Investigations

fcc-es

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Forest Insect Laboratory,
445 U. S. Court House,
Portland, Oregon,
January 20, 1941.

Dr. F. C. Craighead,

Washington, D. C.

Dear Doctor Craighead:

Enclosed are two copies of a report by Hester and Alvey covering the 1941 extensive survey of the Powell National Forest. The extra copy is submitted for Mr. Carter's files.

The Powell report is the last of the reports covering Hester's survey work in Regions 2 and 4 during the past fall. In addition to their recommendations for control work for the 1940-41 season, Hester and Alvey have given a brief outline of past control work on the forest. The latter emphasizes the marked reduction of infestation that was brought about by last year's large project. Thorough coverage of the units recommended for control this year should effect complete control of the Black Hills beetle on the Powell.

Inasmuch as the control recommendations have already been considered and agreed upon by your office and the Forest Service, copies of the report are being forwarded directly to the Forest Service in Ogden.

Sincerely yours,

F. P. Keen,
Senior Entomologist,
Forest Insect Investigations.

XXXXXXXXXXXX

Forest Insect Laboratory,
445 U. S. Court House,
Portland, Oregon,
January 20, 1941.

Mr. William L. Robb,
Assistant Regional Forester,
Forest Service Building,
Ogden, Utah.

Dear Mr. Robb:

Enclosed are two copies of the 1941 extensive survey report of the Powell National Forest prepared by Hester and Alvey. The extra copy is provided for the information of the forest supervisor.

The control recommendations contained in the report are those upon which the current control project is based. In view of the marked reduction obtained from last year's large and thorough project, it is believed that similar coverage of the units recommended for control this year should effect a complete clean up of the Black Hills beetle infestation on the Powell.

Sincerely yours,

F. P. Keen,
Senior Entomologist,
Forest Insect Investigations.

Enclosure

CC: Dr. Craighead

January 20, 1941.

EXTENSIVE SURVEY REPORT OF THE POWELL NATIONAL FOREST, UTAH—1940

by
D. A. Hester,
Bureau of Entomology and Plant Quarantine
and
Wanless Alvey,
U. S. Forest Service

An infestation of the Black Hills beetle (Dendroctonus ponderosae Hopk.) in Pinus ponderosa has been present on the drainage of the East Fork of the Sevier River on the Powell National Forest for the past several years. In 1936 control work was undertaken on a strip of forest land adjoining Bryce Canyon National Park. During this project, designed to clean up a protection strip next to the Park boundary, 2,280 infested trees were treated. In 1937, a similar project resulted in the treatment of 3,303 trees. In 1938 it appeared that little had been gained from past work because of an influx of beetles from the untreated area to the west. For this reason a larger area was covered and 4,664 trees were treated.

In 1939 it was decided that it would be necessary to treat the entire drainage of the East Fork of the Sevier River if satisfactory results were to be obtained. An extensive survey was made of the susceptible timber and it was estimated that 12,000 infested trees were present on the area. Treating work was started about the first of October 1939 and continued until June 30, 1940. The area treated was covered 100 percent by spotting and treating crews. As the treating

progressed, it was evident that the estimates made from the 1939 extensive survey were considerably and consistently low. Consequently, it was impossible to complete the entire control project with the funds and within the time available. Nevertheless, the bulk of the infestation was treated, for the heaviest concentration of beetle-killed trees was present on the three-fourths of the project area that was covered by control. A total of approximately 18,000 infested trees were cut and burned.

The reason for the large error in the 1939 survey cannot be positively assigned, but it is thought, as a result of a field checkup in the fall of 1940, that two factors were largely responsible. First of these factors was a heavy windfall on about half of the area. It was not discovered, until the survey was completed and the control under way, that a high percentage of the wind-thrown pines were infested on the lower side. These trees materially increased the number of trees that had to be treated. The second and perhaps the main factor was the occurrence of large groups of "bug trees" in pole stands on the north end of the treated area. These small trees, many of which were only 2 or 3 inches in diameter, showed few external evidences of attack. It is probable that many such trees passed unnoticed by the cruisers.

In the fall of 1940 a 4.7 percent extensive survey was again made of the susceptible type. This survey indicated that excellent

results were obtained from the 1939 project. It was estimated that only 1,400 newly attacked trees were present on the area where 18,000 trees had been treated. This indicated a 92 percent reduction of infestation. The reduction is thought to be entirely due to control work and not natural causes, for untreated areas on both sides of the unit showed a substantial increase in infestation.

The 1940 extensive survey was made by a four man crew headed by Foreman Alvey. The crew was hired by the U. S. Forest Service and was under technical supervision of the Bureau of Entomology and Plant Quarantine. Work was started on September 17 and was completed on October 12. In all, 91 man-days were charged to the project. Of this number 85 days were spent in running strips and the remaining 6 in establishing camps.

A sample of 3,501.5 acres was taken on a total area of 74,540 acres. This gave a 4.7 percent sample for the entire survey. For convenience in administering control the survey data have been given by natural control units. These units are discussed in the following pages (see also summary table and map.) (Map and photostating by U. S. Forest Service.)

Proctor

This is a small clearly defined unit at the head of Proctor Canyon and below the Paunsaugunt Rim. In all there are approximately two sections of ponderosa pine timber in a patch like mixture with

brush and Douglas-fir. The 5.1 percent survey revealed a very heavy infestation estimated at 1,100 infested trees on the entire area. The error of this estimate may be relatively high for the degree of coverage was hardly adequate for such a small unit.

The infested trees appeared to be about equally divided between large mature trees and young thrifty timber. The 56 new attacks encountered on the survey had an average estimated diameter of 15.3 inches. Group sizes ran from 2 to 50 infested trees. The Proctor unit contained the heaviest infestation on the forest and should be given first consideration for control if there is any question of not completing the entire 1940-41 project.

Upper East Fork

Upper East Fork is a 17,000-acre unit which comprises all of the ponderosa pine in the East Fork drainage south of the area treated last year. The unit was given low priority in 1939. Treatment was recommended only in case the other areas were cleaned up. Because a larger job was encountered on the forest than was anticipated, this area was not treated. The 1940 survey of 5.4 percent indicated that, since last year, there had been a substantial increase in the number of infested trees. Now the unit is estimated to have a total of about 2,800 infested trees, or 105.6 trees per section. Rated as second in importance, the unit will probably have to be worked early in the fall or late in the spring, for it is the most inaccessible area in the

proposed 1940-41 project. The Proctor area with 1,100 trees and Upper East Fork with 2,800 trees make up about 67 percent of the total number of infested trees estimated for the forest.

Red Canyon

The Red Canyon unit consists of about four sections, a portion of which lies on both sides of Highway No. 12 about midway between Bryce Canyon and the junction of Highways 12 and 89. The infestation is estimated, from a 5.7 percent survey, at about 68.5 trees per section or a total of 275 trees for the unit. The area is quite accessible and can probably be worked when weather conditions prohibit work in other areas. It is recommended that this unit be covered 100 percent by spotting and treating crews.

Daves Hollow

Daves Hollow is a small unit of 2500 acres. The area was partially covered last year but was not spotted 100 percent. A 6.1 percent survey indicated that the infestation is well scattered over the unit. It seems advisable to cover the area with spotting crews even though the infestation is estimated at only 41 infested trees per section, or a total of 160 trees for the unit. The spotting of the four areas mentioned above will result in a 100 percent coverage, during the 1939-40 and 1940-41 projects, of practically all the ponderosa pine south of Highway 12 and west of Bryce Canyon National Park.

Area Treated Winter of 1939-40

During the winter of 1939-40, 18,000 infested trees were cut and burned on 38,400 acres. This area was again covered in the fall of 1940 by a 4.1 percent survey and was estimated to contain about 23.3 trees per section, or a total of 1400 infested trees. The remaining infested trees occur as individuals and in groups up to 10 or 15 trees.

Although the infestation was reduced from a very heavy infestation to a near endemic condition in a single year, it is thought that the infestation can be further reduced by removing the remaining groups. If this is done in the spring, after the infested trees have become conspicuous by fading, spotting will be unnecessary. Even though it is necessary to treat by the peeling method because of the fire hazard at that time of year, the elimination of the spotting operation should make the work practicable. The cost per tree should not greatly exceed the cost of the winter work. It is recommended that the area be worked in the spring. The treating should be concentrated on groups and should be continued only as long as a reasonable cost per tree can be maintained.

Pine Creek--Sweetwater Canyon--Greens

These three areas consisting of a total of about 12,800 acres north of Highway 12 are estimated to contain a total of about 100 infested trees. The areas were covered by a 5 percent survey which indicated that they were practically free of infestation. All trees found were in very small groups or occurred as individuals. No control is recommended for any of these three areas.

* * * \

Forest Service crew. This gave a 4.7 percent survey of the entire area.

Four units comprising 23,340 acres are estimated to contain 4,335 infested trees. It is recommended that these areas be covered 100 percent by spotting and treating crews.

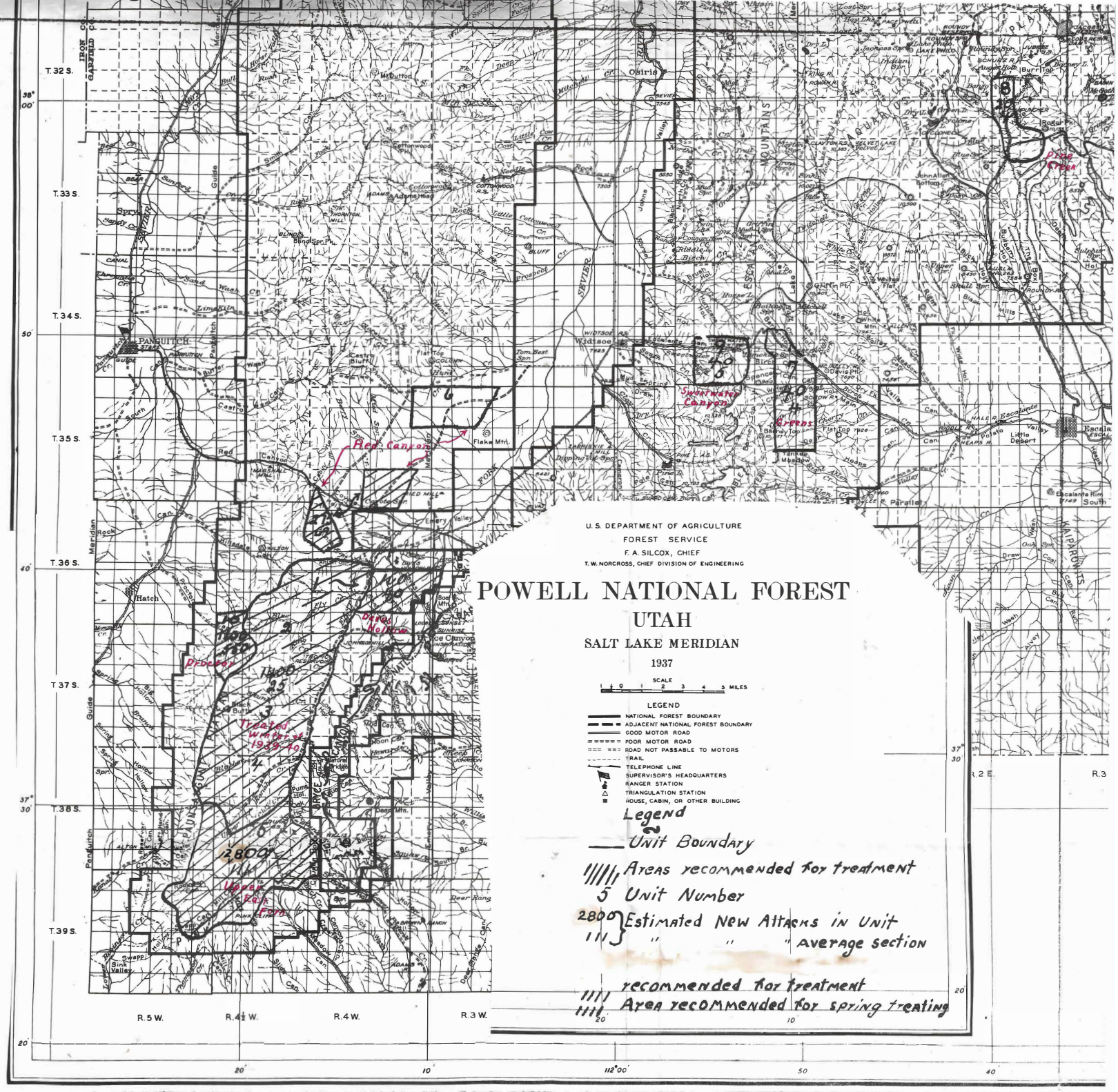
On the 38,400-acre area treated in the 1939-40 project, there is an estimated infestation of 1,400 trees, a reduction of 92 percent since last year. A spring clean up with special emphasis upon treatment of groups is recommended for 1941.

Three units containing a total of 12,800 acres were surveyed and found to be endemic. No control work is recommended for these units.

CC: Dr. Craighead (2)
Mr. Robb (2)
Mr. Keen
Mr. Furniss
Mr. Hester

Summary Table

Name of Area	Insect Species	Tree Species	No. of Man Days Used on Survey	Size of Area in Acres	Size of Sample in Acres	Size of Sample in Percent	No. of Infested Trees in Sample	Estimated No. of Infested Trees per Section	Estimated Total No. of Infested Trees	Recommendations
Proctor	Dendroctonus ponderosae	Pinus ponderosa	3	1,280	65.5	5.1	56	550	1,100	Cover 100 percent by spotting and treating crews.
Upper East Fork	"	"	33	17,000	922.0	5.4	152	105.6	2,800	"
Red Canyon	"	"	7	2,560	146.0	5.7	16	68.5	275	"
Daves Hollow	"	"	5	2,500	152.0	6.1	10	41.0	160	"
Subtotals and Averages			48	23,340	1285.5	5.5	234	118.9	4,335	Cover 100 percent by spotting and treating crews.
Area treated Winter of 1939-1940	Dendroctonus ponderosae	Pinus ponderosa	26	38,400	1576.0	4.1	57	23.3	1,400	Treat groups in spring
Subtotals and Averages			74	61,740	2861.5	4.6	291	59.4	5,735	To be treated
Pine Creek	Dendroctonus ponderosae	Pinus ponderosa	6	3,640	182.0	5.0	1	3.2	20	Treating not necessary
Sweetwater Canyon	"	"	4	2,920	146.0	5.0	2	8.9	40	"
Greens	"	"	7	6,240	312.0	5.0	2	3.8	40	"
Subtotals and Averages			17	12,800	640.0	5.0	5	5.0	100	Treating not necessary
Grand Totals and Averages			91	74,540	3501.5	4.7	296	50.1	5,835	


U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
F. A. SILCOX, CHIEF
T. W. NORCROSS, CHIEF DIVISION OF ENGINEERING
POWELL NATIONAL FOREST
UTAH
SALT LAKE MERIDIAN
1937
SCALE
LEGEND
NATIONAL FOREST BOUNDARY
ADJACENT NATIONAL FOREST BOUNDARY
GOOD MOTOR ROAD
POOR MOTOR ROAD
ROAD NOT PASSABLE TO MOTORS
TRAIL
TELEPHONE LINE
SUPERVISOR'S HEADQUARTERS
RANGER STATION
TRIANGULATION STATION
HOUSE, CABIN, OR OTHER BUILDING
Legend
Unit Boundary
Areas recommended for treatment
5 Unit Number
2800 Estimated New Attacks in Unit
1N " " " Average section
recommended for treatment
Area recommended for spring treating
Red Canyon
Sweetwater Canyon
Treated Winter of 1939-40
2,800
Upper Asa Fork
Panguitch
Hatch
Widtsoe
Flake Mtn.
T. 32 S.
T. 33 S.
T. 34 S.
T. 35 S.
T. 36 S.
T. 37 S.
T. 38 S.
T. 39 S.
R. 5 W.
R. 4½ W.
R. 4 W.
R. 3 W.
R. 2 E.
R. 3